Studies on the Antitrypsin of Serum.—In this work Fugimoto (*Jour. Immunol.*, 1918, iii, 51) deals with three aspects of antitryptic activity, namely, its inactivation, the part of the serum in which it is found and the nature of the reaction. His experiments were made throughout with the Bergman method, which he modified by reducing the original concentrations of the reagents. To given amounts of casein are added varying quantities of blood serum and the inactivation is indicated by absence of any precipitation on the addition of acetic acid to the mixture. Serum was employed in the concentration of 1 per cent. to avoid heat coagulation of the serum *per se.* The conclusions reached from his experiments on the effect of heat on antitrypsin confirm in general those of the earlier investigators, namely, that the antitrypsin is thermolabile and that the point of inactivation varies slightly in various sera. Heating rabbit and sheep sera for ten minutes at 75° C. causes a complete inactivation, while a temperature of 65° C. for the same time suffices when horse serum is tested. In no case was the author able to obtain any diminution of the antitryptic properties of the serum by shaking. In order to test in what part of the blood the antitrypsin is found, serum was fractioned by several methods in globulin and albumin and the antitryptic activity of each fraction noted. It was demonstrated that the antitryptic action occurs in both fractions, but in a less degree in the albumin, as was previously stated by Döblin and Kammerer. It was further demonstrated that the antitrypsin is not lost from either the globulin or albumin by dialysis and that the ether extract of serum does not contain antitrypsin. An interesting observation deals with the possible identity of antitrypsin and serum albumin. Purified crystallized serum albumin was shown to exert an antitryptic action, but whether the serum albumin alone is responsible for this activity was not demonstrated.

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

MILTON J. ROSENAU, M.D.,
PROFESSOR OF PREVENTIVE MEDICINE AND HYGIENE, HARVARD MEDICAL SCHOOL, BOSTON, MASSACHUSETTS,

AND

GEORGE W. McCOY, M.D.,
DIRECTOR OF HYGIENIC LABORATORY, UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

Germicidal Action of Freezing Temperatures upon Bacteria.—Hillard and Davis (*Jour. Bacteriol.*, July, 1918) state that intermittent freezing of bacteria exerts a more effective germicidal action than continuous freezing. The reduction is much less in milk and cream than in pure tap water when freezing temperatures are applied, due, no doubt, to physical protection offered to the bacteria by the colloidal and solid matter in suspension. The degree of cold below freezing is not a very important factor in the destruction of bacteria. There is no critical temperature below freezing when the germicidal effect is greatly accelerated. The death-rate of B. coli is much higher in media which are frozen solid than it is in the same media not solid and at a slightly lower temperature. Crystallization, probably resulting in mechanical crushing, is an important germicidal factor in causing the death of bacteria at zero degrees Centigrade and below. The greatest reduction occurs promptly upon freezing and refreezing, but is not caused so much by the sudden change in temperature as by this mechanical factor.

Scabies in Military and Civil Life.—KNOWLES (*Jour. Am. Med. Assn.*, November 16, 1918) states that scabies should be treated by the routine suggested by the leading dermatologists of Great Britain, France and the United States, which is as follows: On the first day the patient is given a warm bath with plenty of soap. One rubbing is given with sulphur (precipitated sulphur, 1 dram to the ounce of petrolatum). On each of the next three days a sulphur rubbing is given. On the fifth day a warm bath, with plenty of soap, and clean clothes are given. Thorough and minute examination of the entire body is made to ensure that no active disease remains. If active lesions are still present four more days of sulphur rubbings are given, followed by another warm bath, another careful examination of the skin surface and clean clothes. The disease is a greater problem in military than civil life, because of its greater frequency and severity. It is rather atypical in military life because of the comparative freedom of the hands and more marked involvement of the penis. Complications secondary to scabies are much more frequent and markedly more severe in military than in civil practice. A rather prolonged convalescence is observed in approximately 10 per cent. of scabies in military practice.

New Pathology of Syphilis.—WARTHIN (*Am. Jour. Syphilis*, July, 1918, No. 3, ii) states that the gumma is not the essential typical lesion of old or latent syphilis. It is a relatively rare formation, and the great majority of cases of syphilis run their course without the formation of gummatous granulomata. The new pathology of syphilis is based upon the demonstration that the essential tissue lesion of either late or latent syphilis is an irritative or inflammatory process, usually mild in degree, characterized by lymphocytic and plasma-cell infiltrations in the stroma, particularly about the bloodvessels and lymphatics, slight tissue proliferations, eventually fibriosis and atrophy or degeneration of the parenchyma. These mild inflammatory reactions are due to the localization in the tissues of relatively avirulent spirochetes. Syphilitic inflammations of this type occur in all tissues and organs, but are most easily recognized in the nervous system, heart, aorta, pancreas, adrenals and testes. They are, however, usually widely distributed throughout the entire body, although in individual cases showing special predilection for certain organs or tissues. No explanation of these system, organ or tissue predilections is yet evident; neither is there any explanation of those cases in which all organs and tissues show the most severe degree of these lesions. The syphilitic is a spirochete carrier. In this respect the Spirocheta pallida is to be classed with the trypanosome, the malarial organisms, lepra and tubercle bacilli, streptococcus, etc. Syphilis tends to become a mild process, but at any time the partnership between the body and the spirochete may become disturbed and tissue susceptibility or virulence of the spirochete become increased so that the disease again appears above the clinical horizon. Immunity in syphilis depends upon the carrying of the spirochete. A price is paid for this immunity in the form of the defensive inflammatory lesions previously described. The disastrous effects of syphilitic infection usually require a period of years for their development. The slowly progressive lesions, fibriosis and atrophy, may at last manifest themselves in paresis, tabes, myocarditis, aortitis, aneurysm, diabetes, hepatitis or in many other forms of tissue damage and functional disturbance. Lesions of the viscera are much more common and important clinically than those of the central nervous system, but they are rarely recognized as syphilitic by the clinician. Syphilitic death occurs most frequently in males between the ages of forty and sixty. Chronic myocarditis is the most common form of death due to syphilis. The pathological diagnosis of syphilis is essentially microscopic. Only in a relatively small number of cases are the gross lesions (tabes, gumma, aortitis, etc.) typical enough to be recognized by the naked eye. A negative diagnosis of syphilis cannot be given with any certainty without a routine microscopic examination of all organs and tissues, but particularly of the left ventricle wall, the aorta, both its arch and abdominal portion, the testes, pancreas and adrenals.

Tuberculosis and Syphilis.—ADELUNG (*Jour. Am. Med. Assn.*, April 27, 1918, No. 17, lxx, 1211) states that in order to impress the importance of the use of the Wassermann test in tuberculosis patients the cases in the Alameda County Tuberculosis Clinic during the past four years were studied. The Wassermann tests were made at the State Hygienic Laboratory in Berkeley. In all cases the sputum examinations confirmed the diagnosis of tuberculosis. Four years are included, 1914 to 1917, during which 195 cases received Wassermann tests. Summing them up for the four years, in 17, or 8.7 per cent., the reaction was positive. This represents what would have been overlooked by the average practitioner when treating open cases of tuberculosis of the lungs without making the Wassermann test.

Toxic Jaundice Due to Dinitrophenol.—WARTHIN (*Int. Assn. of Med. Museums*, Bulletin No. vii, May, 1918) states that poisoning by dinitrophenol is not mentioned by either Thompson or Oliver. Dr. Alice Hamilton, likewise, does not mention it in the Government Bulletin of occupational poisoning in munition workers. Warthin found from his observations, however, that it is capable of producing acute yellow atrophy and toxic jaundice, and states that it must be added to the list of dangerous occupational hepatotoxic poisons. At this time it is, therefore, increasingly important that suitable protection be provided for workers with this product in munitions manufacture.

Trench Fever.—The Medical Research Committee of the American Red Cross (Report of Commission, 1918), consisting of Major Richard P. Strong, Major Homer F. Swift, Major Eugene L. Opie, Captain Ward J. MacNeal, Captain Walter Baetjer, Captain A. M. Pappenheimer, Captain A D. Peacock and Lieutenant David Rapport, studied the method of transmission of trench fever and reached the following conclusions: (1) That trench fever is a specific infectious disease; that it is not a modified form of typhoid or paratyphoid fever and is not related, from an etiological standpoint, to these diseases. (2) That the organism causing the disease is a resistant filterable virus. (3) That the virus causing trench fever is present particularly in the plasma of the blood of trench fever cases and that such plasma will produce the disease on inoculation into healthy individuals. (4) That the disease is transmitted naturally by the louse Pediculus humanus, Linn., var. corporis, and that this is the important and common means of transmission. That the louse may transmit the disease by its bite alone, the usual manner of infection, or the disease may be produced artificially by scarifying the skin and rubbing in a small amount of the infected louse excrement. (5) That a man may be entirely free from lice at the time he develops trench fever, the louse that infected him having left him some time previously as its host, and that the louse need only remain upon the individual for a short period of time in order to infect him. (6) That the virus of trench fever is also sometimes present in the urine of trench fever cases and occasionally in the sputum, and that the disease may be produced in man by the introduction of the virus in the urine or sputum through the scarified or otherwise abraded skin. (7) That since the urine and sometimes the sputum of trench fever patients are infective, these should be sterilized in order to avoid the possibility of accidental infection from them. (8) That in order to prevent trench fever or limit its spread, and thus save man-power for the armies, greater efforts must be made to keep soldiers in general from infestation with lice. The authors state that exceedingly great care should be taken to completely disinfect all patients as soon as practicable, and particularly upon their entering the hospital. Patients on entrance should be carefully bathed and subsequently sponged with alcohol. Their clothing and blankets should be removed, and, whether or not lice or ova are found upon them, should be carefully sterilized by moist heat at a temperature not below 70° C. for half an hour, since it is possible for the virus to be still present on the clothing. It should be borne in mind that a man with trench fever may be entirely free from lice at the time that he develops symptoms of the disease. Trench fever patients should at all times be carefully protected from louse infestation, and inspection of them for lice should be made daily. They should be treated in separate wards. As the urine contains the virus and is infective it should be sterilized during the active stages of the disease. Sputum cups should be provided for the patient and any expectorated sputum and saliva from them sterilized. Officers should regard the systematic destruction of lice as one of the most urgent of their duties, and should exercise every effort to prevent louse infestation among soldiers and to see that any of them infested with lice are promptly disinfected and their clothing sterilized. The above precautions are of the utmost importance in order to prevent the further spread of trench fever among troops.

Observations on the Presence of the Meningococcus in the Blood.—Maxcy (*Jour. Infect. Dis.*, November, 1918) made studies upon the epidemiology of epidemic meningitis at Camp Beauregard. He states that twenty-seven blood cultures done on patients suspected of being cases of abortive meningococcus infection were negative. The abortive meningococcus infection was not a considerable factor in the epidemiology of the disease during the epidemic in February, 1918. The author reports a case of meningococcus infection in which the blood-stream invasion was transient and the organism quickly localized in the meninges, where it yielded to the intraspinal injection of serum; and a case of meningococcus septicemia with transient meningeal involvement, with recovery only after the injection of large amounts of antimeningococcus serum intravenously.

Acute Respiratory Diseases among Troops with Special Reference to Empyema.—Beals, Zimmerman and Marlow (*Jour. Infect. Dis.*, November, 1918) in their study of acute respiratory diseases among troops detailed the incidence of various respiratory conditions, measles and rubella in their relation to each other and to the more serious conditions, pneumonia and empyema. They state that respiratory infections in 1917 and 1918 occurred among troops in waves, the greatest severity of the diseases being at the height of each wave. Not only were pneumonia and empyema more frequent and severe, but also tonsillitis, pharyngitis and bronchitis. The control of such epidemics would appear to depend on the sanitation in barracks as regards ventilation; adequate space and proper separation, especially of those even slightly affected with respiratory disease; on line officers not allowing overheated men to stand inactive in cold winds; on not indiscriminately giving triple typhoid inoculations at the very entrance of the soldier to camp without regard to any respiratory infection he might have at the time; on careful attention to overexertion and exposure of soldiers having mild respiratory disease and on close attention to the details of equipment to ensure adequate clothing for the unacclimated raw recruit on his arrival.

Survival of Typhoid Bacilli in Sour Milk.—Marsh (*Am. Jour. Public Health*, August, 1918, p. 590) states that typhoid and paratyphoid bacilli disappear from souring milk with an acidity represented by about 4 c.c. of $\frac{N}{10}$ NaOH. The dysentery bacilli are more sensitive, disappearing one day earlier than the others. The tests indicate that B. typhosus is sensitive to acidity and is usually destroyed in milk in a short time at about the degree of acidity occurring in fresh buttermilk as obtained in the New York market. Buttermilk would seem to be free of danger as a means of distributing B. typhosus or B. dysenteriæ in the ordinary course of events.

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All communications should be addressed to—

Dr. George Morris Piersol, 1913 Spruce St., Philadelphia, Pa., U. S. A.